Monochrome computer vision for detecting common external defects of mango

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Abstract

Lack of rapid, non-destructive, and precision sorting and grading automatic tools for quality and safety assurance of mango fruit, in India, limits its share in the global market (< 1%) despite being the world's largest producer. External defects on the surface of mango fruit are very common and a major cause of quality deterioration as well as degradation of market value. The goal of this work is, thus, to develop a computer vision system for defect detection of mangoes using monochrome cameras and to check its potential for detecting the defect. Considering the above facts an algorithm was developed and its performance was evaluated based on accuracy, efficiency, and average inspection time. The average accuracy and efficiency of the developed algorithm for defect detection was obtained as 88.75% and 97.88%, respectively. Monochrome computer vision systems are very successful and have great potential to detect various common external defects such as a black lesions, mechanical damage, etc.